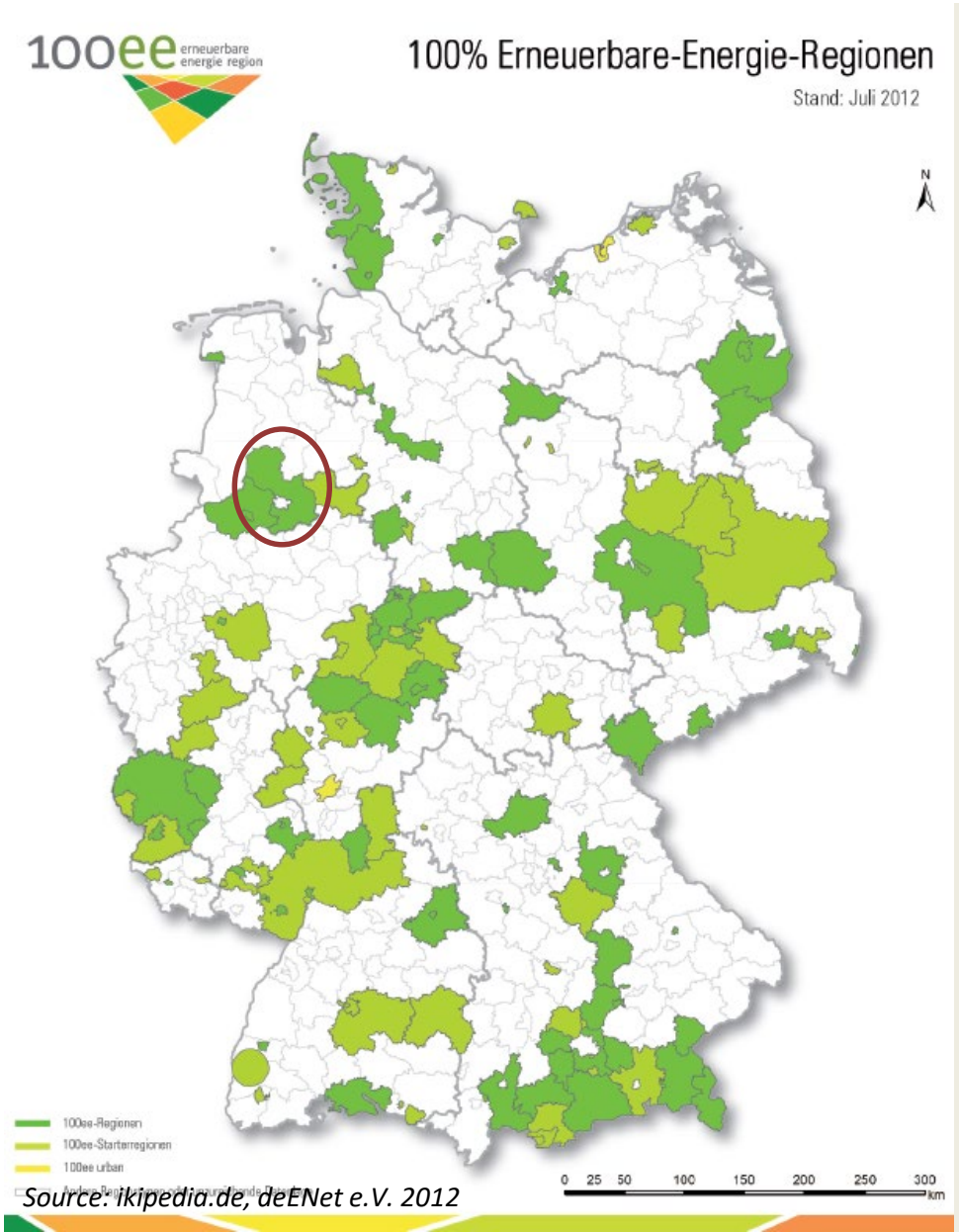
Information

On the way to 100% climate protection

LANDKREIS OSNABRÜCK

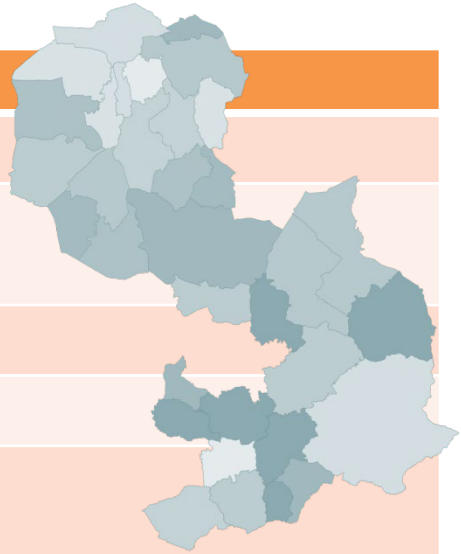
Landkreis Osnabrück
Referat für Strategische Planung · Am Schölerberg 1 · 49082 Osnabrück

For orientation…

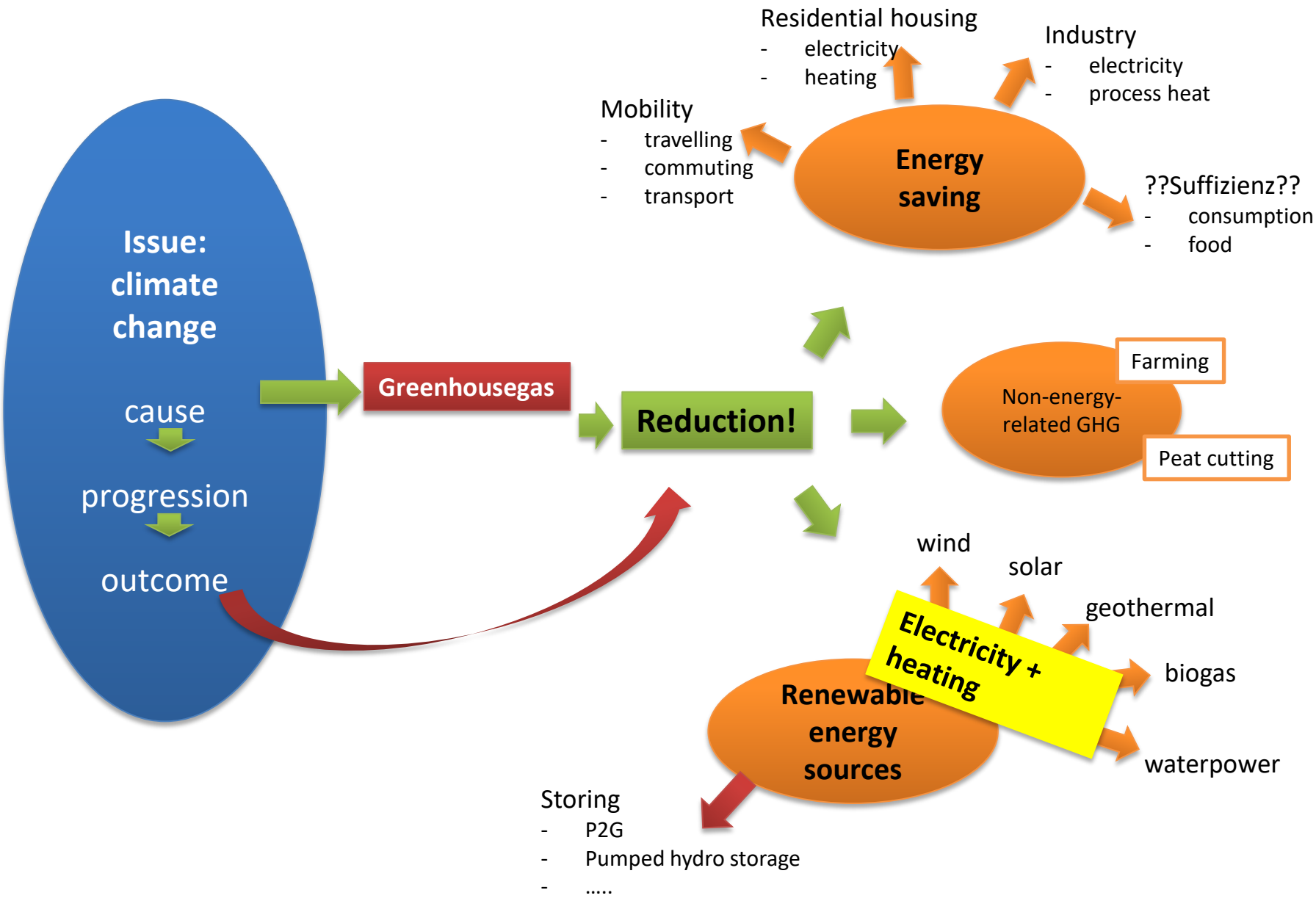


Source: ikipedia.de, deENet e.V. 2012

Landkreis Osnabrück



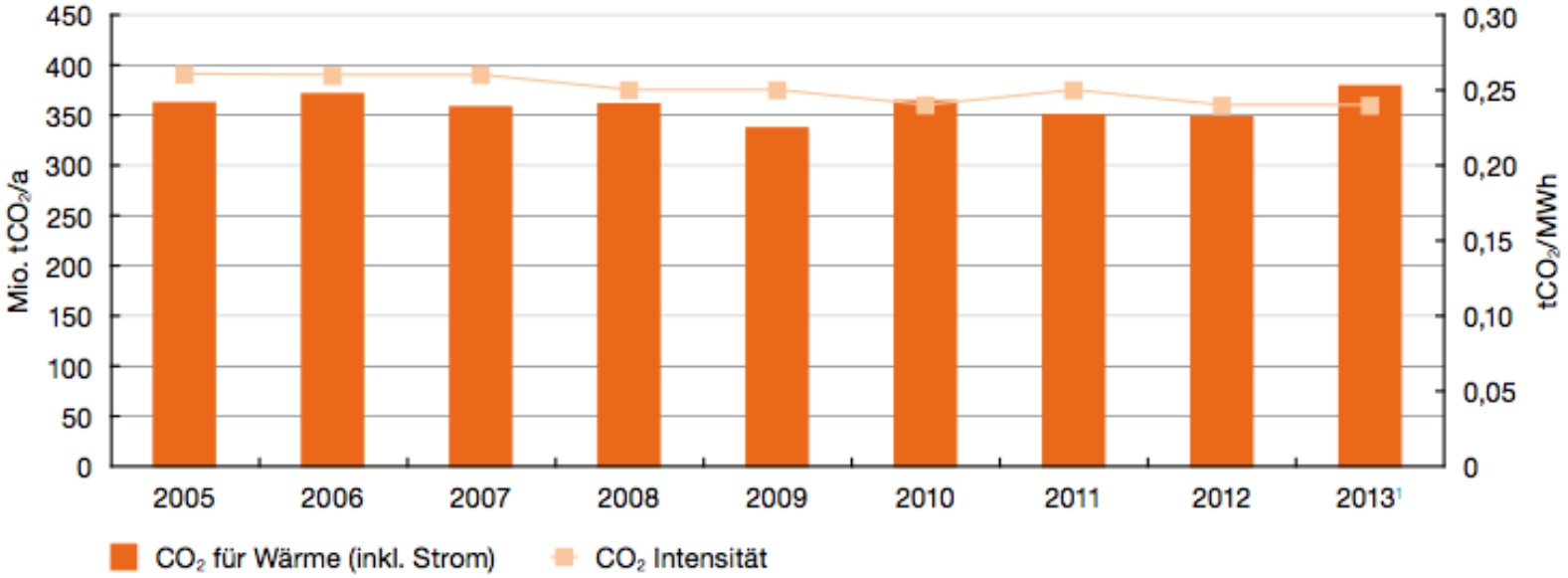
Population	366.221 (31.12.2022)
Area:	2122 km²
Green-house-gas-emission:	6,1 tons per person and year (2022)
Electric energy:	Approx. 89% renewable
Heating:	Approx. 12% renewable
Goals:	<u>2011: statically goals:</u> • 100% renewable electricity until 2030 • 100% renewable heat until 2050 <u>2012: dynamically goals:</u> • 95% reduction green-house-gas-emission • 50% reduction total energy consumption
Demand:	• approx. 1,857 GWh (excludes steelmill GM-Hütte).
Power production facilities:	• 211 wind turbines (2022) production 2020: 969 GWh • 85 biogas plants (2019) production 2020: 378 GWh • 16.791 photovoltaic installations production 2020: 307 GWh
County	• 34 cities & municipalities • City of Osnabrück in the center of the county -> doesn´t belong to county! • South: „Osnabrück uplands“ • North: „northern german lowlands“ • Historic sites: „Varus Battle“ 9 A.D. in Kalkriese


Issue: climate change
cause
progression
outcome
Greenhousegas
Reduction!
Residential housing
- electricity
- heating
Industry
- electricity
- process heat
Mobility
- travelling
- commuting
- transport
Energy saving
??Suffizienz??
- consumption
- food
Non-energy-related GHG
Farming
Peat cutting
wind
solar
geothermal
biogas
waterpower
Electricity + heating
Renewable energy sources
Storing
- P2G
- Pumped hydro storage
- .....

KLIMA Initiative

Projects

Heat-related CO_2-emissions …



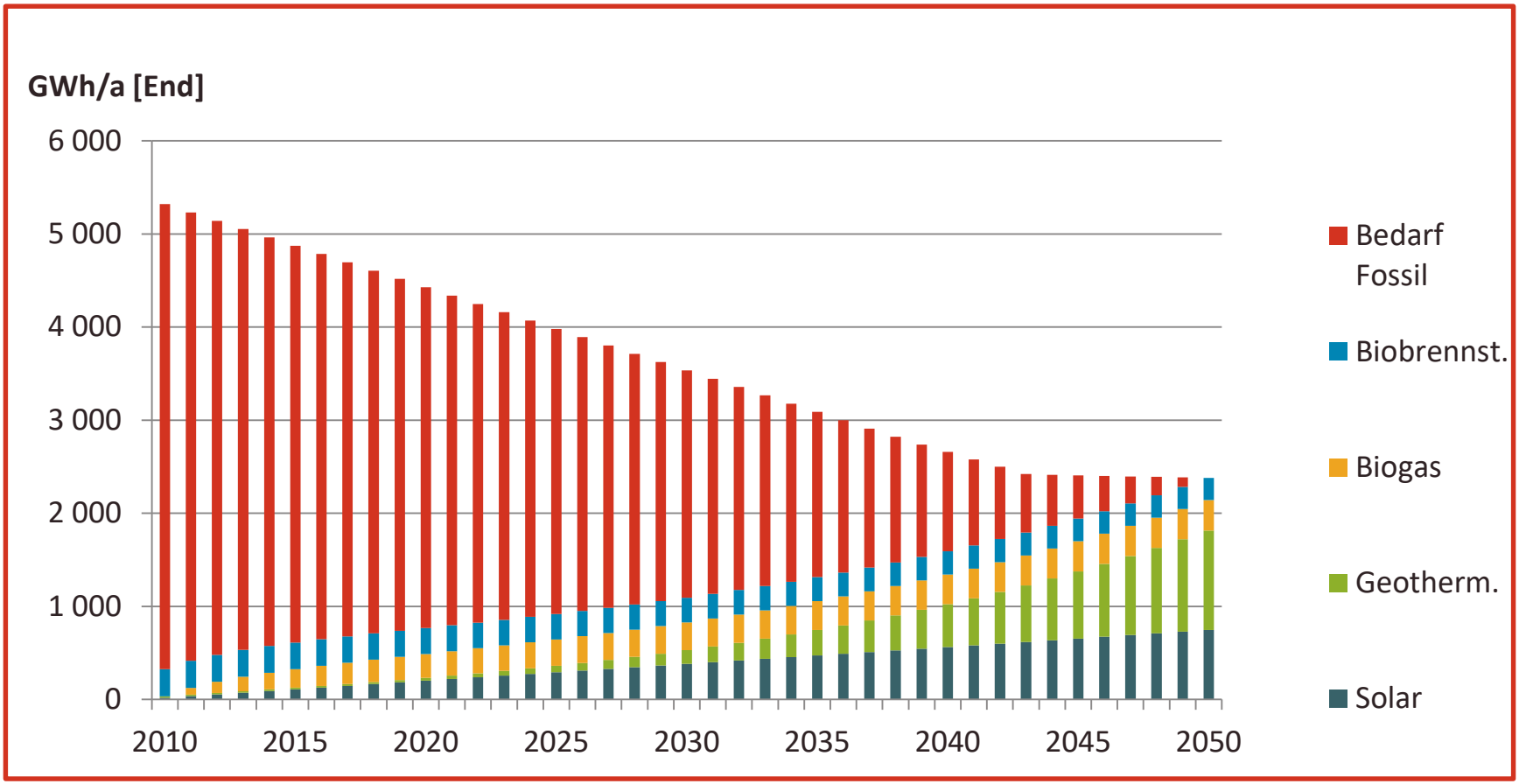
… could not be significant reduced within the last years.

-> CO_2-intensity remained constant

- In 2013 heating was accountable for
  - **50%** of the total energy consumption in Germany
  - **45 %** of the energy related CO2-emissions

Source: Breisig, V. et al: Energiewende-Outlook: Kurzstudie Wärme, PwC AG, Januar 2015

Scenario heat-demand and -production



Industrial energy demand & waste heat

www.fotalia.de

- Between 33% and 50% of industrial used energy is lost as waste heat *(VDI, 2015 und energy 2.0, 2012)*

- Studies estimate, that waste heat constitutes approx. 18-30% of industrial used energy

- Our calculations for Landkreis Osnabrück (ReWIn-Studies): approx. **583 GWh/a theoretical waste heat** **(**roughly 20% of the end energy consumption)

What is „PInA“?

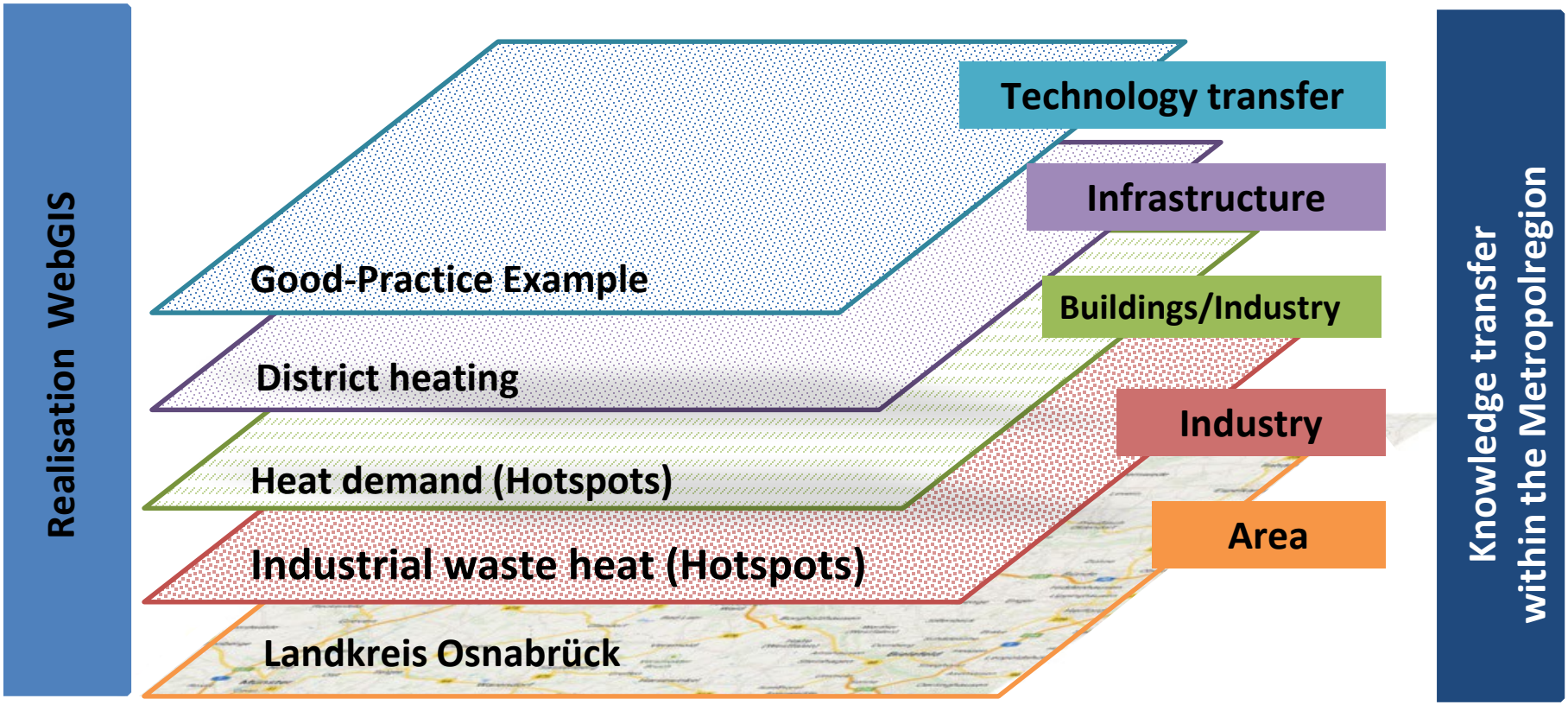
- „**P**ortal für **In**dustrielle **A**bwärme“ (Portal for industrial waste heat) (www.pina-lkos.de)
- Objective: Utilization of industrial waste heat within a company or in industrial estates:
  - Heat sources (industry)
  - Heat sink (households, companies, public buildings)
- Part of „Masterplan-Strategy“
- Climate protection is economic promotion!
  - ➢Energy as a cost factor
  - ➢Energy as a location factor
  - ➢Climate protection as an image factor

www.fotalia.de

Aim of the project

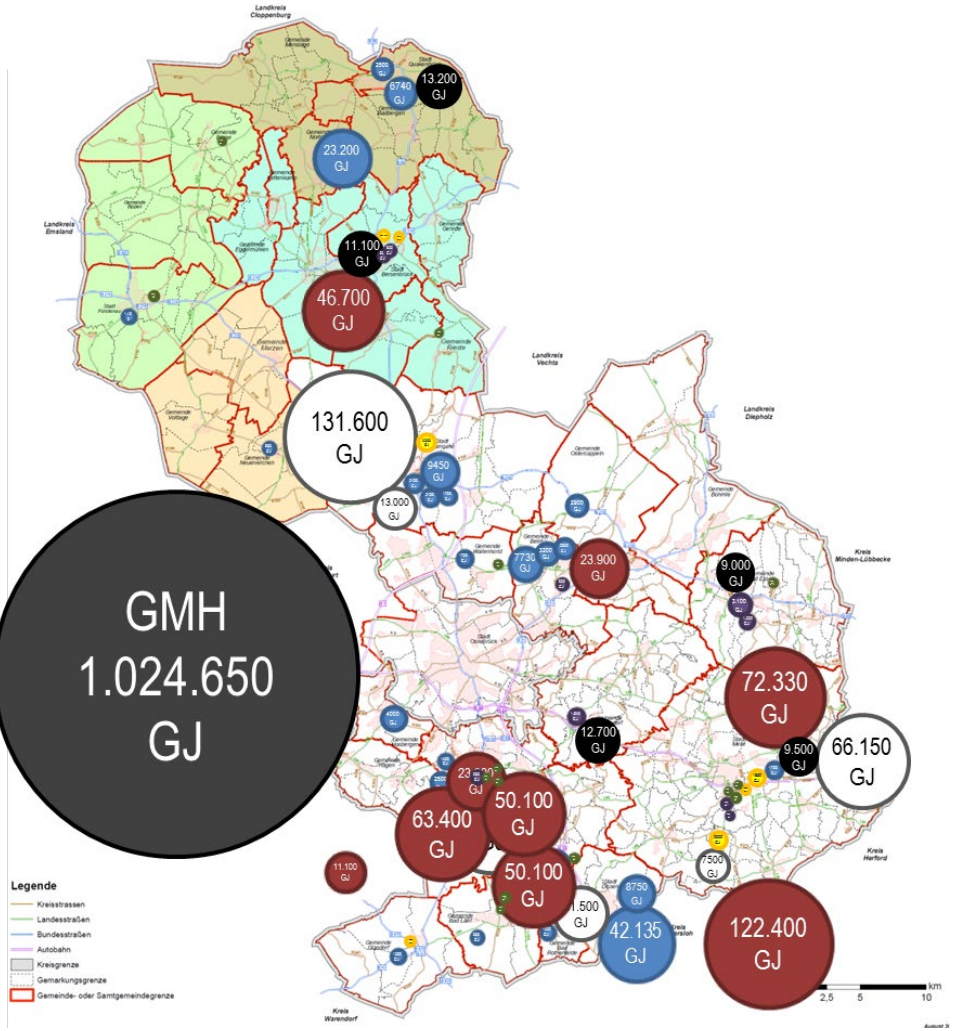
- Gathering and visualization of detailed information on industrial waste heat in companies
- Creation of a detailed heat-demand register
- Provision of information, facts and examples to remove barriers
- Matching of demand and suppy (Hot Spots)
  - Waste heat as a ressource
  - Recycling of waste heat

PInA: elements of the PInA-Portal



Theoretical waste heat potential separated by industries

- WZ 10 Nahrungsmitteln
- WZ 17 Papier
- WZ 22 Kunststoffwaren
- WZ 23 Ziegel, Keramik
- WZ 24-1 Metallerzeugung
- WZ 24-2 GMH
- WZ 25 Metallerzeugnisse
- WZ 28 Maschinenbau



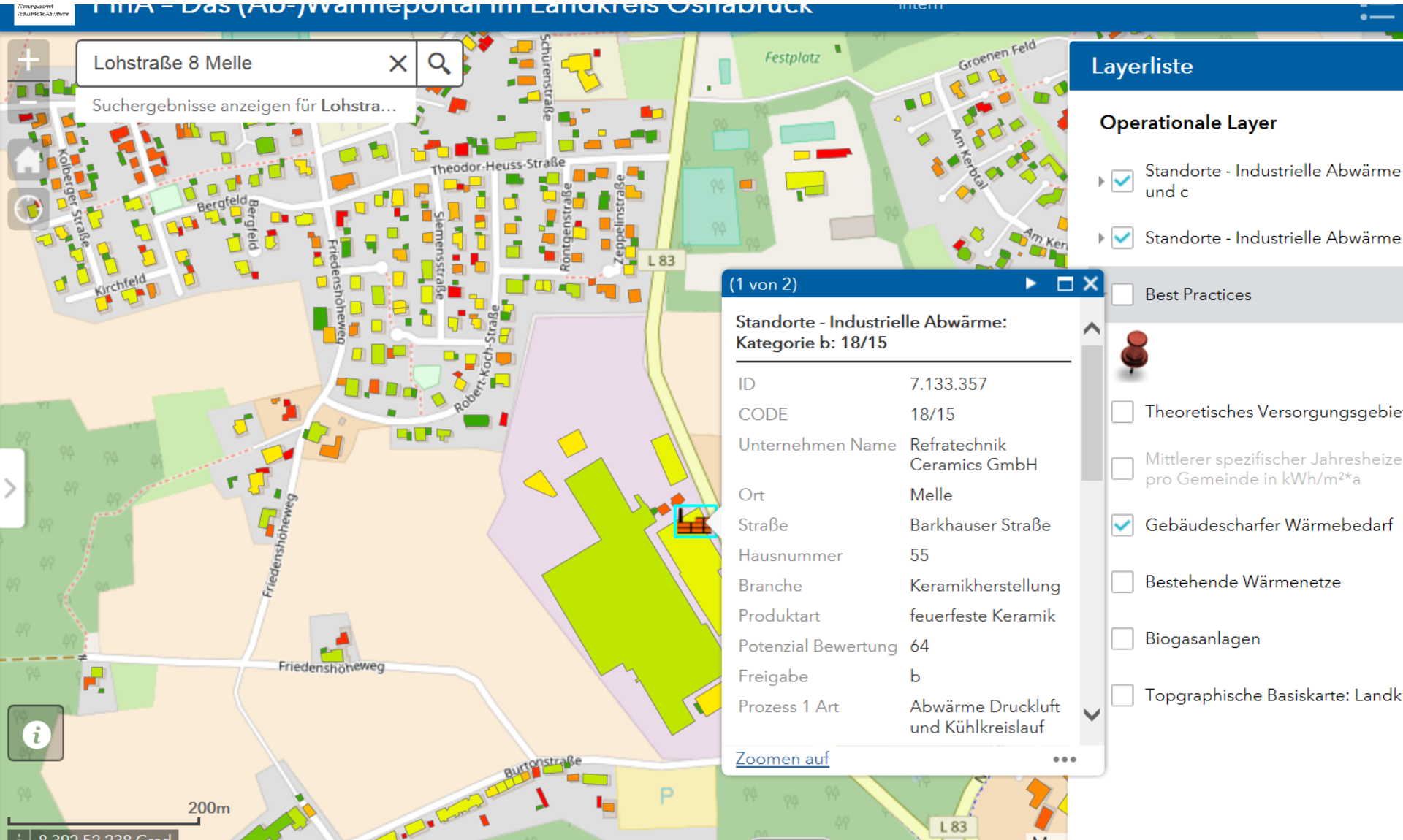
Heating demands in existing building stock

Methodology and results

- Typology for every building including: proper data, Geodata und Polygon (3-D Laserscan)
- 70-attributes for approx. 230.000 buildings, including heat transition coefficient of building parts
- Main variables are date of construction and structure models for allocation to a specific building typology
- Renovation-cycle via random generator

- Results:
  - 209.777 analysed buildings
  - 92.879 residential buildings without auxiliary buildings and 115.111 non-residential buildings were calculated

Industrial waste-heat hotspots and heat demands



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Thank you!

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